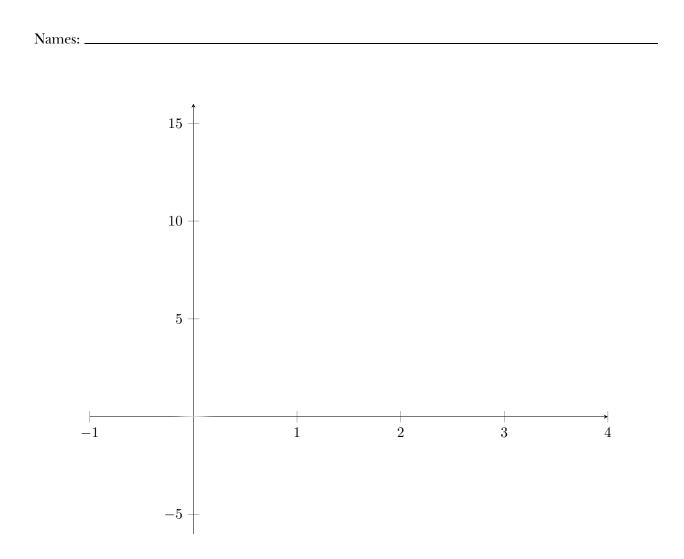
Week 5 Recitation Problems MATH:113, Recitations 304 and 305



1. Plot the function $f(x) = x^2$. Next, find <u>and plot</u> the secant lines for a = 2 and: b = 1, b = 3/2, and b = 5/2.

2. Which line best approximates the slope of f(x) at x = 2?

3. Write down the limit definition for the derivative of a function f(x): explain what each variable represents.

Definition 1: derivative of a function.

4. Why does the above expression give us the *exact* slope?

5. Are there any scenarios where a function *doesn't* have a derivative? If so, give an example.

6. Find the derivatives of the functions below. After finding each derivative, find the value of the derivative at the input value x = 4.

$$f(x) = \sqrt{5x - 8} \qquad \qquad h(x) = \frac{1}{x}$$

$$g(x) = 7x^2 + 5x \qquad \qquad L(x) = \frac{x}{x+1}$$